

That which is claimed:

1. A method for detecting congestion in a communications network comprising:
 - (a) determining a control packet transmission duration for a control packet, said control packet having a control packet transmission priority;
 - (b) determining a bearer packet transmission duration for a bearer packet, said bearer packet having a bearer packet transmission priority, wherein said bearer packet transmission priority is lower than said control packet transmission priority;
 - (c) calculating a delay in a transmission of said bearer packet; and
 - (d) comparing said delay to a threshold delay.
2. The method of claim 1, further comprising:
 - (e) rejecting a communication request when said delay exceeds said threshold delay.
3. The method of claim 1, further comprising:
 - (e) redirecting a communication request when said delay exceeds said threshold delay.
4. The method of claim 1, further comprising calculating said threshold delay.
5. The method of claim 1, wherein said calculating of said threshold delay comprises:
 - determining a mean control packet delay;
 - multiplying said mean control packet delay by a multiplier;
 - determining a minimum control packet delay; and

adding the result of said multiplying to said minimum control packet delay.

6. The method of claim 1, wherein said calculating comprises:
 - determining a control packet delay for a specified percentile of all bearer packets;
 - multiplying said control packet delay by a multiplier;
 - determining a minimum control packet delay; and
 - adding the result of said multiplying to said minimum control packet delay.
7. The method of claim 1, further comprising transmitting said control packet.
8. The method of claim 1, further comprising creating said control packet.
9. The method of claim 1, further comprising setting said control packet transmission priority.
10. The method of claim 1, further comprising transmitting said bearer packet.
11. The method of claim 1, further comprising setting said bearer packet transmission priority.
12. The method of claim 1, further comprising repeating steps a-c.
13. A method for detecting congestion in a communications network comprising:

- (a) receiving a control packet, having a control packet transmission priority and a control packet source timestamp;
- (b) recording a control packet time received;
- (c) determining a control packet transmission duration by subtracting said control packet source timestamp from said control packet time received;
- (d) receiving a bearer packet, having a bearer packet transmission priority and a bearer packet source timestamp, wherein said bearer packet transmission priority is lower than said control packet transmission priority.
- (e) recording a bearer packet time received;
- (f) determining a bearer packet transmission duration by subtracting said bearer packet source timestamp from said bearer packet time received;
- (g) calculating a queuing delay encountered by said bearer packet by subtracting said control packet transmission duration from said bearer packet transmission duration; and
- (h) comparing said queuing delay to a threshold delay.

14. The method of claim 1, further comprising:

- (i) rejecting a communication request when said queuing delay exceeds said threshold delay.

15. The method of claim 1, further comprising:

- (i) redirecting a communication request when said queuing delay exceeds said threshold delay.

16. The method of claim 13, further comprising calculating said threshold delay.

17. A computer-readable medium on which is encoded computer program code for detecting congestion in a communications network comprising:

- (a) computer program code for determining a control packet transmission duration for a control packet, said control packet having a control packet transmission priority;
- (b) computer program code for determining a bearer packet transmission duration for a bearer packet, said bearer packet having a bearer packet transmission priority, wherein said bearer packet transmission priority is lower than said control packet transmission priority;
- (c) computer program code for calculating a delay in a transmission of said bearer packet; and
- (d) computer program code for comparing said delay to a threshold delay.

18. The computer-readable medium of claim 17, further comprising:

- (e) computer program code for rejecting a communication request when said delay exceeds said threshold delay.

19. The computer-readable medium of claim 17, further comprising:

- (e) computer program code for redirecting a communication request when said delay exceeds said threshold delay.

20. The computer-readable medium of claim 17, further comprising program code for calculating said threshold delay.
21. The computer-readable medium of claim 20, wherein said program code for calculating said threshold delay comprises:
 - program code for determining a mean control packet delay;
 - program code for multiplying said mean control packet delay by a multiplier;
 - program code for determining a minimum control packet delay; and
 - program code for adding the result of said multiplying to said minimum control packet delay.
22. The computer-readable medium of claim 20, wherein said program code for calculating said threshold delay comprises:
 - program code for determining a control packet delay for a specified percentile of all bearer packets;
 - program code for multiplying said control packet delay by a multiplier;
 - program code for determining a minimum control packet delay; and
 - program code for adding the result of said multiplying to said minimum control packet delay.
23. The computer-readable medium of claim 17, further comprising program code for transmitting said control packet.

24. The computer-readable medium of claim 17, further comprising program code for creating said control packet.

25. The computer-readable medium of claim 17, further comprising program code for setting said control packet transmission priority.

26. The computer-readable medium of claim 17, further comprising program code for transmitting said bearer packet.

27. The computer-readable medium of claim 17, further comprising program code for setting said bearer packet transmission priority.

28. The computer-readable medium of claim 17, further comprising program code for repeating steps a-c.

29. A computer-readable medium on which is encoded computer program code for detecting congestion in a communications network comprising:

- (a) program code for receiving a control packet, having a control packet transmission priority and a control packet source timestamp;
- (b) program code for recording a control packet time received;
- (c) program code for determining a control packet transmission duration by subtracting said control packet source timestamp from said control packet time received;

(d) program code for receiving a bearer packet, having a bearer packet transmission priority and a bearer packet source timestamp, wherein said bearer packet transmission priority is lower than said control packet transmission priority.

(e) program code for recording a bearer packet time received;

(f) program code for determining a bearer packet transmission duration by subtracting said bearer packet source timestamp from said bearer packet time received;

(g) program code for calculating a queuing delay encountered by said bearer packet by subtracting said control packet transmission duration from said bearer packet transmission duration; and

(h) program code for comparing said queuing delay to a threshold delay.

30. The computer-readable medium of claim 29, further comprising program code for:
(i) rejecting a communication request when said queuing delay exceeds said threshold delay.

31. The computer-readable medium of claim 29, further comprising program code for:
(i) redirecting a communication request when said queuing delay exceeds said threshold delay.

32. The computer-readable medium of claim 29, further comprising program code for calculating said threshold delay.

33. A system for detecting congestion in a communications network comprising:

a first media gateway in communication with said communications network, wherein said first media gateway comprises:

a timestamp clock, a control packet generator in communication with said timestamp clock, and

a classifier marker in communication with said control packet generator;

a second media gateway in communication with said communications network, wherein said second media gateway comprises:

a system clock, and

a delay calculator in communication with said system clock.

34. The system of claim 33, wherein said timestamp clock comprises a first stratum-1-classified signal receiver time.

35. The system of claim 33, wherein said system clock comprises a second stratum-1-classified signal receiver time

36. The system of claim 33, wherein said communications network comprises an Internet protocol (IP) network.

37. The system of claim 22, wherein said first media gateway comprises an IP voice tandem.

38. The system of claim 22, wherein said second media gateway comprises an IP voice tandem.

39. The system of claim 33, wherein said first stratum-1-classified signal receiver time comprises a network access card.

40. The system of claim 33, wherein said first stratum-1-classified signal receiver time comprises a global positioning system receiver.

41. The system of claim 33, wherein said second stratum-1-classified signal receiver time comprises a network access card.

42. The system of claim 33, wherein said second stratum-1-classified signal receiver time comprises a global positioning system receiver.

43. The system of claim 33, wherein said classifier marker comprises a differentiated services (DiffServ) classifier marker.

44. The system of claim 33, wherein said classifier marker comprises:
a control packet queue; having a first transmission priority; and
a bearer packet queue, having a second transmission priority, wherein said first transmission priority is higher than said second transmission priority.

45. The system of claim 33, further comprising a connection admission controller in communication with said delay calculator.